

REMARKS:

Amendments to the specification

In the specification the corrections requested by the Examiner have been introduced.

Amendments to claims

In claims 1, 4 and 8 reference numerals have been deleted.

In claim 8 the multiple dependencies has been removed.

Claims 6, 7 and 9-20 have been withdrawn.

No other amendments have been made to the claims.

Claim rejections – 35 USC 102

The examiner has rejected claims 1-5 and 8 under 35 USC 102(b) as being anticipated by Craig, US patent 5,935,430.

As correctly identified by the Examiner Craig discloses a flow device comprising:

- a flow channel formed between at least a first member and a second member arranged in engagement with each other,
- the flow channel having an inlet end portion in fluid communication with an inlet opening and an outlet end portion in fluid communication with an outlet opening.

The flow device further comprises moat channels associated with the flow channel.

In other words, the device defined in present claim 1 and the device disclosed in Craig share the following features:

- (i) A “primary” flow channel
- (ii) A “secondary” channel arranged to control undesired flow

However, although the two devices share these features, the problems solved by the respective designs are very different which is also reflected in the actual design of the two flow devices.

More specifically, Craig addresses the issue of transient liquids generated by diffusion bonding, which liquids may fill the flow channels created between the two members to be fused by diffusion bonding. According to Craig this problem is solved by the provision of moat channels surrounding the flow channel, this design allowing excess flow of transient liquid to flow into the moat, wherein the excess flow may be contained, see column 3, lines 54-65.

As appears, the purpose of the moat channels is not to drain excess transient liquids but merely to collect it. This also appears sensible as diffusion bonding does not generate "excessive" amounts of transient liquids but merely enough liquid to disrupt the shape or dimension of the fluid-handling flow channels. This is also evident from the actual design of the embodiments of figs. 5-7 in which the moat channels 321A and 321B have no openings to the exterior, this in contrast to the flow channels 334A and 334B which are provided with apertures 338.

In contrast, the present invention is based on essentially the opposite problem. Whereas Craig is concerned with the problem of preventing excess transient liquid to flow into the flow channel during manufacture, the present invention relates to a flow restrictor of the type shown in fig. 6 of applicants co-pending application US 2004/0059316 and is concerned with the safety related problem of effectively draining "excessive" amounts of fluid originating from the flow channel away from the flow device, this to avoid fluid short-cutting the flow restrictor. This is also clear from e.g. the passage on page 5 of the present specification.

"The safety channel establishes a flow path such that all or a portion of the fluid short-cutting the opposed channel portions in a given U-bend would be lead

away from the flow channel, i.e. a “short-cut to the short-cut” is established.”

Present claim 1 defines a “safety channel comprising an end portion in fluid communication with an exterior space relative to the flow restrictor”. The shown embodiments of Craig does not comprises such a fluid communication, however, the Examiner interprets moats 321A and 321B to be open to the exterior, this based on the disclosure of col. 10, lines 38-43.

Applicant respectfully disagrees with this interpretation. Turning to Craig col. 10, this portion of the specification (including lines 38-43) describes different general designs for planar flow devices comprising flow channels which may be provided with apertures and ports. At this point there is no disclosure of the moat structures in accordance with the invention. The moat structures are introduced in column 11, however, there is absolutely no disclosure neither implicitly nor explicitly that the moat channels should be provided with openings to the exterior. The provision of ports and apertures is also discussed in respect of the figs. 6 and 7 embodiment, see the paragraph bridging columns 12 and 13, however, this is solely for the purpose of connecting the flow channels of the device with exterior flow structures. This is also emphasized by the embodiment of fig. 5 in which the flow channel 334B is provided with apertures 338 whereas the moat channel 321B is not provided with any apertures or openings to the exterior in general.

As the problem addressed by the present invention is neither identified in Craig nor relevant for the flow device disclosed in Craig, it appears that Craig cannot point the skilled person towards modifications as defined in present claim 1.

Conclusion

In conclusion, Craig alone or in view of any of the references on file fails to make obvious to the skilled person a flow device as defined in present claim 1.

All further claims are dependent upon an independent claim.

In view of the above, applicants respectfully submit that all claims are in condition for allowance.

The Commissioner is hereby authorized to charge any fees, including fees for extensions of time, in connection with this application and to credit any overpayments to Deposit Account No. 14-1447. Should the Examiner have any questions or concerns, she should feel free to contact the applicants' attorney to discuss them.

Respectfully submitted,

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/Marc A. Began, Reg. No. 48,829/

Marc A. Began, Reg. No. 48,829
Novo Nordisk Inc.
Customer Number 23650
(609) 987-5800